ISSN 2959-6149

Exploring Implicit Biases Towards Disadvantaged Groups: An IAT Approach

Wenjia Hu

Oct Middle School (Shennan Avenue, Shenzhen, Guangdong, China, 518000)

Abstract:

Disadvantaged groups, such as individuals with disabilities, orphans, and the impoverished, constitute a significant portion of the population across the globe. These groups encounter numerous challenges in their daily lives. A societal goal should be to support disadvantaged groups in keeping pace with social development and overcoming their hardships. Prejudice, exclusion, and discrimination persist, hindering the integration of these groups into mainstream society. This study seeks to examine public attitudes towards disadvantaged groups using the implicit association test (IAT), which measures implicit acceptance or exclusion based on reaction times. Compared to surveys or interviews, the IAT can more accurately reveal an individual's unconscious biases and provide quantitative results. In this study, a set of ten positive attribute words, ten negative attribute words, ten conceptual words related to disadvantaged groups, and ten conceptual words related to non-disadvantaged groups were utilized. A total of twenty participants were recruited to attend the trial. The data analysis revealed a general tendency for implicit rejection of disadvantaged groups, with a D value of 0.92, which is very close to the maximum threshold of [-1, 1]. Moreover, the reaction time between the compatible group and incompatible group is significantly different. The results found no statistical difference in attitudes between females and males. The findings of this study highlight the implicit perceptions of disadvantaged groups and call for a societal shift away from exclusion, prejudice, and discrimination. It emphasizes the need for a more equitable, inclusive, and respectful approach towards these groups, advocating for a societal ethos that fosters understanding and support.

Keywords: Disadvantaged groups, IAT paradigm, Acceptance, Exclusion, Reaction time, Implicit bias, Attitude

1. Introduction

Disadvantaged groups, including individuals such as orphans, people with disabilities, and the impoverished elderly, face significant barriers in accessing and securing the social resources necessary for full societal participation. These barriers are often a result of their relatively limited influence in the productive aspects of society, leading to typical challenges such as poverty, inconvenience, or even discrimination. Globally, in 2022, an estimated 1.35 billion individuals—approximately 17% of the world's population—were classified as multidimensional poor (NUDP, 2022), while about 650 million people, or 8.4%, lived in absolute poverty (World Bank, 2021). Though the disadvantaged groups consist a significant portion of the whole population, they are often overlooked. The existence of these groups is a complex outcome of social development and serves as a critical measure of a society's level of social justice and inclusivity. Addressing the issues faced by disadvantaged groups and reducing their prevalence is a challenge shared by nations worldwide. Factors contributing to their difficulties include insufficient economic resources, inadequate policies and regulations, and a lack of appropriate facilities. Perhaps most perniciously, social discrimination against these groups perpetuates their marginalization.

Discrimination, prejudice, and exclusion are particularly evident in key areas such as employment, education, healthcare, housing, and social participation. For example, research has shown that people with disabilities often face implicit bias in the workplace (Odile & Eva, 2012). A study in the medical field revealed that the relevant professional practitioners (mean clinical experience 26.5 months, range 6-265 months), can hold negative implicit attitudes towards patients, suggesting that implicit bias is a widespread issue. Similarly, educational settings have been found to harbor implicit biases against children with autism, as compared to their neurotypical peers (Kelly & Barnes-Holmes, 2013). These studies indicate that biases

can affect educational opportunities and treatment.

These biases, whether conscious or unconscious, significantly impede the ability of disadvantaged groups to improve their circumstances and reintegrate into mainstream society. It is therefore essential to deeply analyze and address these issues to foster more inclusive social environments. Previous research on attitudes and discrimination toward disadvantaged groups has often concentrated on those with disabilities or specific illnesses, focusing primarily on negative attitudes such as discrimination or prejudice (Gou, 2007; Zhang, 2010; Ding, 2015; Yang, 2017). As societies evolve and education becomes more accessible, there could be a gradual decrease in prejudice and discrimination against these groups. This study aims to provide an updated examination of attitudes towards a broader range of disadvantaged individuals, including not only those with disabilities and illnesses but also orphans and the impoverished elderly. By employing the implicit association test (IAT), which measures both positive and negative attitudes based on reaction times, this research seeks to uncover the true attitudes of individuals towards disadvantaged groups. The IAT offers a more objective and precise assessment of these attitudes, providing valuable insights that can inform future research and policy development. The study aspires to contribute to the knowledge on social attitudes and to encourage a more equitable and respectful treatment of all members of society, regardless of their socio-economic status or personal circumstances.

2.Method

2.1 Participants

In this study, a sample of 20 participants (mean age = 28.55, SD = 12.40) was randomly recruited from Shanghai, China, comprising 11 males and 9 females. Prior to the experiment, each participant was informed about the procedures, and all provided voluntary consent to participate. The participants were all right-handed and had either normal visual acuity or corrected-to-normal vision.

2.2 stimuli

The Implicit Association Test (IAT) was developed utilizing PsychoPy software to measure individuals' attitudes towards disadvantaged and non-disadvantaged groups. Conceptual words were divided into two categories: 'disadvantaged groups' and 'non-disadvantaged groups.' Attribute words were also categorized into 'acceptance' and 'exclusion.' For each category, ten words were carefully selected and adjusted to ensure clarity and relevance. The 'disadvantaged' group was represented by words such as ' childless elderly due to the death of their only child', 'begging,' ' prosthetic limb,' ' children out of school,' 'disability,' 'orphan,' 'old,' 'patient' 'homeless,' and 'wheelchair.' The 'non-disadvantaged' group was represented by words like 'the white-collar,' 'teacher,' 'employee,' 'classmate,' 'neighbor,' 'advisor,' 'police officer,' 'attorney,' 'doctor,' and 'writer.' Words signifying 'acceptance' included 'understanding,' 'appreciating,' 'welcoming,' 'promising,' 'rely on,' 'friendship,' 'admiring,' 'sympathetic,' 'professional,' and 'cheerful.' Conversely, words indicating 'exclusion' comprised 'rejection,' 'denial,' 'antipathy,' 'resistance,' 'neglect,' 'dismissal,' 'tolorance,' 'skepticism,' 'uninteresting,' and 'expulsion.'

2.3 Design and procedure

This study used a within-subjects design, wherein each participant was assigned to complete both a compatible and an incompatible task. Participants were seated in front of a computer screen and, after thoroughly reading the experimental instructions, they provided responses using the keys 'A' and 'L'. The procedure involved seven sequential steps for each participant. To mitigate the influence of order and practice effects on performance, the order of presentation for the compatible task (combining acceptance with the disadvantaged group and exclusion with the non-disadvantaged group for trials 2-4 as shown in Table 1) and the incompatible task (combining acceptance with the non-disadvantaged group and exclusion with the disadvantaged group for trials 5-7 as shown in table 1) was randomized across subjects. For the purpose of statistical analysis, only the data from Trial 4 and 7 were utilized as the primary dataset. The initial trials were intended to familiarize participants with the experimental protocols and to practice the tasks. A detailed description of the experimental methodology is presented in Table 1.

Upon completion of the experiment, each participant received a small gift as appreciation. Following the conclusion of all experimental sessions, the reaction times and accuracy rates from Trial 4 and 7 were extracted for subsequent statistical analysis.

Table 1: The IAT procedure

Trial	Task	Frequency	Response key	
			A	L
1	Attribute Words Recognition	10	Acceptance	Exclusion
2	Conceptual Words Recognition	10	Disadvantaged Groups	Non-disadvantaged Groups
3	Attributive Words + Conceptual Words Joint Exercise	10	Acceptance + Disadvantaged Groups	Exclusion + Non-disadvantaged Groups
4	Attributive Words + Conceptual Words Joint Task	20	Acceptance + Disadvantaged Groups	Exclusion + Non-disadvantaged Groups
5	Reverse Conceptual Words Recognition	10	Non-disadvantaged Groups	Disadvantaged Groups
6	Attributive Words + Reverse Conceptual Words Joint Exercise	10	Acceptance + Non-disadvantaged Groups	Exclusion + Disadvantaged Groups
7	Attributive Words + Reverse Conceptual Words Joint Task	20	Acceptance + Non-disadvantaged Groups	Exclusion + Disadvantaged Groups

2.4 Data analysis

Data screening and analysis were conducted to exclude participants with error rates exceeding 20%. Following Greenwald's (2003) scoring method, reaction times below 300ms were adjusted to 300ms, and those exceeding 3000ms were capped at 3000ms to control for potential distractions and other errors. The cleaned data were then subjected to statistical analyses.

To assess the subjects' implicit attitudes towards disadvantaged and non-disadvantaged groups, within-group T-tests were applied to the reaction times of participants in Trial 4 and 7, and D-values were calculated. Additionally, to determine if there were gender differences in implicit attitudes, separate within-group T-tests were conducted for female and male participants in Trial 4 and 7, with D-values calculated for each group.

3. Result

3.1 D values of implicit attitudes

In the implicit association task, the calculated D-value for all participants was 0.92, with a standard practice score (SP) of 499.37 and an IAT score of 460.15. For male participants, the D-value was 0.88, with an SP of 440.33 and an IAT score of 388.75. Female participants exhibited a D-value of 0.97, with an SP of 549.02 and an IAT score of 531.55.

3.2 T-test between compatible task and incompatible task

As shown in Table 2, within-group T-tests revealed that participants exhibited significantly shorter reaction time on the compatible task ($M = 1585.35$, $SD = 423.11$) compared to the incompatible task ($M = 2045.50$, $SD = 484.29$; $t = -3.20$, $p < 0.05$). This pattern was consistent among male participants, who showed significantly shorter reaction time on the compatible task ($M = 1662.50$, $SD = 381.67$) than on the incompatible task ($M = 2051.25$, $SD = 448.60$; $t = -2.08$, $p < 0.05$). Female participants also demonstrated significantly shorter reaction time on the compatible task ($M = 1508.20$, $SD = 468.01$) than on the incompatible task ($M = 2039.75$, $SD = 542.05$; $t = -2.35$, $p < 0.05$).

Between-group T-tests comparing male and female participants' reaction time on both tasks did not yield any statistical differences ($p > 0.05$).

Table 2: IAT Effect Values for Implicit Association Tests

		RT (ms)	IAT (ms)	D
Total	Compatible	2045.50	460.15	0.92
	Incompatible	1585.35		
Male	Compatible	2051.25	388.75	0.88
	Incompatible	1662.51		
Female	Compatible	2039.75	531.55	0.97
	Incompatible	1508.20		

4. Discussion

The objective of this study was to assess the public's implicit attitudes, positive or negative, towards the disadvantaged groups. This study adopted IAT method via reaction time tests which could reveal the subjects' attitudes more accurately and quantitatively. Utilizing a within-subjects design, the experiment manipulated task compatibility (compatible vs. incompatible) as the independent variable, with the reaction time of participants serving as the dependent variable. The analysis revealed that participants, both male and female, exhibited notably high levels of implicit exclusion towards the disadvantaged groups, as reflected by D values approaching the threshold interval of [-1, 1], signifying a potent implicit bias. Furthermore, T-test outcomes indicated that reaction times for the compatible task were significantly longer than those for the incompatible task, further substantiating the presence of strong implicit exclusionary attitudes towards disadvantaged groups. There is no statistical difference between female participants and male participants.

Consistent with prior research, this study's findings indicate a tendency among the general public to exhibit implicit exclusion and negative attitudes towards the disadvantaged groups. Yang (2017) and Tu (2017) have previously documented similar negative implicit attitudes towards individuals with disabilities. Fang's (2023) research into college students' attitudes towards the AIDS community, as well as Ho's (2022) investigation into attitudes towards autistic groups — even among special education teachers — demonstrate a pervasive degree of implicit bias.

The implications of these implicit biases are extensive, impacting various sectors of society. In education, healthcare, and employment, such biases can result in the unjust and inequitable treatment of disadvantaged groups. It is necessary for the government to take a leading role in addressing this issue, promoting public awareness through welfare and community initiatives to foster greater interaction and positive engagement with the disadvantaged groups. Additionally, targeted training and educational programs for professionals in key sectors can help raise consciousness about prejudice and its effects. Policy initiatives should focus on advancing inclusivity, improving social support systems, and establishing stringent regulatory frameworks to minimize the occurrence of unfair treatment stemming from implicit biases. In this way, the disadvantaged groups could better integrate into society.

However, this study recognizes its limitations, which should be taken into account in future research. The participant sample was primarily drawn from Shanghai, and it is possible that different regions may yield disparate results. This possibility underscores concerns regarding the generalizability of the study's findings. Consequently, it would be beneficial for additional investigations to be conducted in other geographical areas. Moreover, the participants in this study were all relatively highly educated, a characteristic that may not be reflective of the broader population. Future studies could engage a more diverse sample, encompassing a range of educational levels. Other factors, i.e. occupations, age groups, also deserve to be investigated. As a preliminary study, the sample size of this research was relatively small, and increasing the number of participants in future studies could contribute to the generation of more generalized outcomes.

5. Conclusion

The objective of this study was to examine the implicit attitudes, specifically acceptance or exclusion, towards disadvantaged groups within the general public. The data analysis from the Implicit Association Test (IAT), which utilized reaction time as the test method, revealed that the D-values for both male and female participants were near the thresholds of [-1, 1]. Additionally, the reaction times for the compatible task were significantly shorter than those for the incompatible task. These results indicate a significant implicit tendency to reject disadvantaged groups, irrespective of the gender. This discovery highlights the need to increase the awareness of disadvantaged groups. And both the public and governmental sectors

should pay more efforts to mitigate implicit biases and prevent the perpetuation of injustices.

References

Archambault, Mark E, Rhee V, et al. Utilizing Implicit Association Testing to promote awareness of biases regarding age and disability. Journal of Physician Assistant Education, 2008, 19(4): 20-26

Banaji, M. R. , Nosek, B. A. , & Greenwald, A. G. . (2003). 3 understanding and using the implicit association test: iv. Journal of Personality and Social Psychology, 85(2), 197-216.

Ding, Y.B., Wang, W.W., & Meng, Chong Zheng. (2015). Situational effects of high school graduate students' implicit attitudes toward people with disabilities. China Special Education (6), 6.

Fang, Wenxuan. (2023). The effects of college students' real pride and arrogant pride on empathy and implicit bias in the AIDS community-the role of perspective taking. (Doctoral dissertation, Wuhan Institute of Physical Education).

Gou, Z. (2007). Elementary school teachers' implicit perceptions of students' attention problems. Chinese Tissue Engineering Research and Clinical Rehabilitation, 11(30), 3.

He Huan. (2022). A study of pre-service teachers' exoteric and implicit attitudes toward children with autism. (Doctoral dissertation, Northwest Normal University).

Kelly, A. , & Barnes-Holmes, D. . (2013). Implicit attitudes towards children with autism versus normally developing children as predictors of professional burnout and psychopathology. Research in Developmental Disabilities, 34(1), 17-28.

Rohmer, O. , & Louvet, E. . (2012). Implicit measures of the stereotype content associated with disability. British Journal of Social Psychology, 51(aop).

Tu Qiaomei. (2017). Measurement of College Students' Explicit and Implicit Attitudes Toward People with Disabilities. (Doctoral dissertation, Shenyang Normal University).

United Nations Development Programme. (2022). Global multidimensional poverty index (MPI) 2022: A decade of progress. UNDP. https://hdr.undp.org/en/mpi

World Bank. (2021). Poverty and shared prosperity 2020: Reversals of fortune. World Bank. https://www.worldbank.org/en/publication/poverty-and-shared-prosperity-2020

Yang, Y., & Han, B. X.. (2017). A review of research on implicit attitudes toward people with disabilities in the general society Jane. China Special Education (7), 5.

Zhang, L., & Deng, H.-Y. (2010). Epiphenomenal and implicit effects of HIV stigma and its relationship with interpersonal acceptance. Chinese Journal of Clinical Psychology (6), 4.